Meningococcal Disease

Definition: Severe infections with the bacterium *Neisseria meningitidis* in a normally sterile site, in the blood (meningococcemia) or the cerebral spinal fluid surrounding the brain (meningococcal meningitis). Infection may be due to various serogroups including A, B, C, and others. ICD-9 codes 036.0-036.9.

Summary

There were 111 cases of meningococcal disease (2.1/100,000) reported in Washington in 1994, with seven deaths. Permanent brain damage can result from this bacterial infection. While some forms of meningococcal disease are vaccine-preventable, other forms can be contained only through contact tracing and antibiotic prophylaxis.

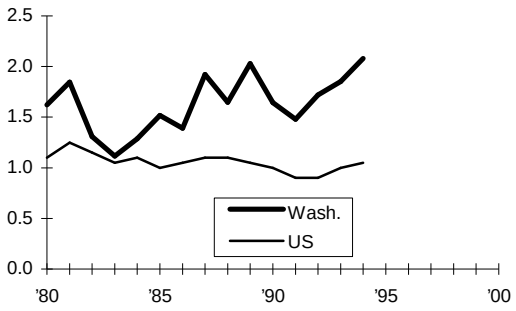
Time Trends

From 1980 to 1994, annual meningococcal disease rates in Washington varied from 1.1 to 2.1 per 100,000 population. In 1989, an outbreak of group C meningococcal disease resulted in an elevated rate of 1.9 per 100,000.

As a result of an increase in group B meningococcal disease in southern Washington and northern Oregon in 1993 and 1994, the 1994 rate in Washington reached 2.1 per 100,000, with 111 cases in the State. Southwestern counties had particularly high rates due to a regional increase in the strain of group B meningococcal disease designated as ET-5.

On an annual basis, meningococcal disease is more common in the winter and spring. This pattern occurs in Washington as well as in the remainder of the United States. Rates tend to be slightly lower in the country overall as compared to Washington.

Meningococcal Disease
Reported Cases Per 100,000 Persons



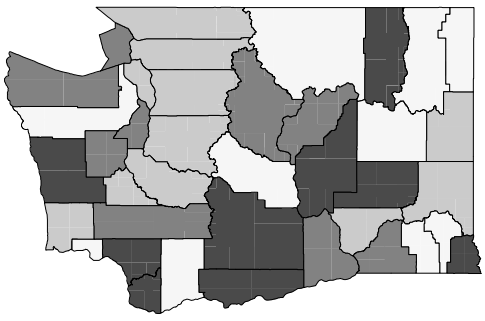
Year 2000 Goal

No state target has been developed.

Geographic Variation

The average annual meningococcal disease incidence rate from 1992-1994 in Washington was 1.9 cases per 100,000 population. Certain Washington counties have recently had meningococcal disease rates higher than the state average, although rates are based on small numbers in most counties and thus subject to considerable fluctuation over time, even when data for more than one year are combined. For the three year period 1992-1994, rates were higher than average in 18 counties and lower than average in 21 counties. Ten counties had no meningococcal disease cases in that period. Rates were particularly high in Asotin, Clark, Cowlitz, and Klickitat Counties. This pattern reflects an increase over several years in group B ET-5 meningococcal disease in southern Washington and northern Oregon. The high rates in Adams and Ferry counties were based on cases in only one of the three years.

Meninogococcal Disease
Average Annual Incidence, 1992-1994

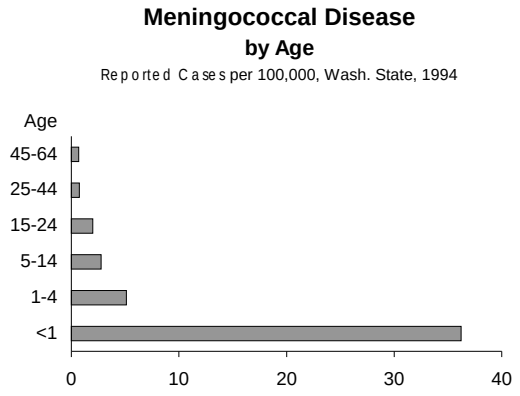


Cases Per 100,000 Persons
- 0.0 to 0.4
- 0.5 to 1.8
- 1.9 to 3.8
- 3.9 to 16.0

State Average: 1.9
National Rate: NA

Age and Gender

Meningococcal disease rates typically are highest in the younger age groups. The 1994 annual rate reached 36.2/100,000 among children under a year of age and 5.1/100,000 for children 1-4 years of age. Rates are typically similar by gender across the age groups.



Race and Ethnicity

With approximately 100 meningococcal disease cases annually in the state, case numbers are too small for analysis among racial and ethnic groups other than whites.

Other Measures of Impact and Burden

Hospitalization. A small number of children with meningococcal disease receive adequate antibiotic treatment as outpatients. The remaining cases either require hospitalization, often in an intensive care unit, or are found dead.

In 1994 there were 96 hospitalizations in Washington associated with meningococcal disease. The mean length of stay was 5.8 days, accounting for 557 total hospital days. It is possible a few of these admissions were not acute infections, but resulted from long term complications of an initial infection.

Years of potential life lost. The seven fatal cases in 1994 (6 % of the total) ranged in age from two months to 60 years and accounted for 266 years of potential life lost to age 65.

Quality of life. There is no surveillance in Washington for long-term complications of meningococcal infections. Residual problems for people who survive their infections can include brain damage, paralysis, or other neurologic problems.

Risk and Protective Factors

Transmission of the bacterium is by direct exposure to respiratory droplets from infected people. Although up to 10% of the population may carry the organism in the nose and throat, severe disease is rare. Younger children are more at risk of developing invasive meningococcal disease except for group B ET-5 disease, which occurs more commonly in older children and young adults.

Transmission of meningococcal disease can increase among adults brought together in crowded living conditions such as refugee camps or barracks. Outbreaks have occurred in the United States in educational and military facilities. Group A meningococcal outbreaks occur in sub-Saharan Africa, and have been reported from elsewhere in the world.

High Risk Groups

Close contacts of cases. Antibiotic prophylaxis is recommended for people who have close contact with confirmed cases such as household members or younger children in a day care setting. During an outbreak, prophylaxis of a wider group may be appropriate. In rare situations involving discrete populations such as outbreaks on a college campus, mass prophylaxis or immunization may be conducted.

Newly aggregated adults. Except in the military, immunization is not recommended. Crowding or congestion in living quarters should be reduced when possible.

Certain altered immunity states. Individuals who have specific rare immune deficiencies or who are lacking a functional spleen are at increased risk for acquiring meningococcal disease.

Certain travelers. Some travelers to countries with high rates of meningococcal disease may have an increased risk of infection.

Intervention Points, Strategies and Effectiveness

Although a vaccine is available for meningococcal serogroups A, C, Y, and W-135, the duration of protection is only one to three years and the C component is ineffective in children

under two years of age. Routine immunization is not recommended except for military populations and for individuals with certain immune deficiencies. Immunization may be appropriate for people traveling to countries with epidemic or high rates of endemic group A or C meningococcal disease. An effective vaccine for the more common group B meningococcal disease is not available in the United States.

There are no adequate measures to prevent the transmission of respiratory agents in the general community. Although colonization of the nose and throat with *Neisseria meningitidis* occurs commonly, invasive meningococcal disease is uncommon. Since disease occurrence is essentially sporadic, public health intervention involves educating health care providers to facilitate early diagnosis, clinical intervention, and identification of close contacts requiring antibiotics to eradicate infection.

Data Sources

Washington State Department of Health, *Annual Communicable Disease Report 1994.*

Centers for Disease Control and Prevention, *Summary of Notifiable Diseases, United States, 1994*.

Washington hospitalization data: Comprehensive Hospital Abstract Reporting System (CHARS).

For More Information

American Public Health Association, *Control of Communicable Disease Manual, 1995*.

Washington Department of Health, Office of Epidemiology.